# NAVMSMO

## Meeting Minutes: VV&A TWG Workshop Number 17

The Navy Modeling and Simulation Management Office (NAVMSMO) Verification, Validation, and Accreditation (VV&A) Technical Working Group (TWG) Number 17 was held on Friday, 07 May 2004 at the NAVSEA Carderock Division Headquarters in West Bethesda, MD. The complete workshop agenda is presented in Enclosure (1).

The focus of Workshop 17 centered on approaches to M&S VV&A, including the VV&A of operational test assets and the automation of VV&A documentation, the VV&A of human computer interface simulation, and a proposal to evolve the VV&A TWG to include subcommittees. All available presentation slides and related documents are posted in the VV&A section of the NAVMSMO site. The URL for the NAVMSMO site is http://navmsmo.hq.navy.mil. For point of contact and other detailed information, please contact the VV&A Help Desk at vva@navmsmo.hq.navy.mil.

TWG Workshop 17 made great strides in galvanizing the Navy M&S VV&A community through its identification of VV&A commonalities. The efforts highlighted a wide spectrum of M&S VV&A and attendees took a tour of the NAVSEA facilities that helped to give a visual reference to the kinds of M&S testing efforts conducted throughout the Navy. In summary, this dynamic workshop not only fostered discussions directly related to the presenters' briefs, but also in addressing both individual VV&A concerns and those areas which require Navy M&S VV&A-wide collaboration.

## 1.0 COMOPTEVFOR: An Approach to the Modeling of Operational Test (and Other) Assets

COTF presented a high-level approach to the VV&A of M&S, with specific emphasis on operational test assets. Citing the DoD move towards capabilities-based management, integration, and expansion of responses, the briefing emphasized the need to move from the traditional, three-part approach to M&S VV&A (system/threat/environment) to a seven-part M&S VV&A that addresses the system, threat, and environment, as well as the blue and red cognitive issues, environmental considerations, and blue/red interaction. Contextually, this view showed the limitations of current M&S VV&A efforts which often run in a vacuum without addressing the various constraints and contexts that these differing domains can bring. In this light, the imperative need for distinct, upfront M&S requirements was emphasized, creating a shift in VV&A execution to AV&V. In conclusion, the briefer emphasized that this shift in focus to capabilities-based requirements will help to create more robust and accurate M&S VV&A effort.

Discussions following this presentation included the need for resources to enable such paradigm shifts and the need to create mechanisms on the T&E level from which individual programs can leverage. Further, the need for process commonality to support technical needs was discussed. The briefer was asked whether there has been an instance where a program had failed to meet a milestone specifically because it

failed the requirement to use an accredited model. The presenter explained that although this has not been identified as the sole cause for milestone failure, but that this lack has been cited as a contributing factor (use not viable, deficiencies at the operational level, &c). Finally, discussions ended with the need to identify orthodox, Navy-wide enforcement policies, rather than those enforced on the individual level. The presenter concluded that the OT-entry criteria and other requirements comprised the only current enforcement tool but that this tool is implicitly inflexible as it allows no variation of weight or use.

## 2.0 NAVMSMO: Developing a Web-Enabled VV&A Documentation Tool (VDT)

NAVMSMO presented an overview and demonstration of VV&A Documentation Tool (VDT). The VDT was been created in order to aid VV&A planners and implementers streamline the planning and execution of VV&A documentation and more easily comply with the DON VV&A Implementation Handbook. The presentation included highlights of the tool's capabilities, the flexibility of the underlying XML-based VVML, including cut-and-paste content and standardized documentation. The briefer emphasized the inherent utility created by the tool's user-friendly interface and collaborative capabilities. The presentation concluded with a demonstration of the VDT. Additionally, the forthcoming CD-version of the tool will allow VDT use on those systems that do not allow .exe loads on the hard drive.

The web-enabled VDT is available for use online at http://navmsmo.hq.navy.mil. Further, a demonstration copy of the software for this tool is available for interested parties. Please contact the VV&A Help Desk for further POC details.

Discussions following this presentation included the extent and granularity of the entry fields in the VDT and the tool's portability. The briefer stated that, in terms of granularity, the tool's entry fields are correlated one-to-one with the DoN M&S VV&A Handbook. In terms of portability, that CSCI requirement traceability have been incorporated into the codes and tested in the labs (requirements and use cases). Further questions revolved around M&S programs' need to use traceability tools (DORS, CORE, etc). Given that the tool clearly has a correlation for requirements traceability, is it capable of integrating such products? The presenter clarified that the files from such a traceability tool (commercial vendor) could be linked through COTS linking partnerships for "seamless performance" but that this goal was slightly angled from the VDT's original functional purview.

## 3.0 Tour of the NAVSEA Carderock Division Headquarters

Attendees were given a guided walking tour of the Carderock testing facilities which included the historical, architectural, and operational aspects of the Carderock Facilities. Highlights from the tour included a walk through the model shop where precise scale models of all Navy ships and submarines have been constructed for testing and the large testing facilities, such as the David Taylor Model Basin, Circulating Water Channel, Rotating Arm, and Maneuvering and Sea-keeping Basin.

For further information or to schedule a tour, please view http://www.dt.navy.mil/code30/code38/external/tours/comm_tours.html.

## 4.0 NAVMSMO VV&A TWG: Reformation and Evolution

NAVMSMO presented a proposal to transform the TWG tos a two-tiered effort by preserving its current structure and adding an issues-resolutions sub-committee. Over the last several years, the NAVMSMO M&S VV&A office has tracked issues in VV&A implementation from various attendees of past TWGs. As many of these issues are of similar themes and have yet to be resolved, the presenter proposed the transformation of the TWG to include committees to analyze and resolve these recurrent problems. The presenter gave an overview of the TWG effort to this point, including the identification of the M&S VV&A community and issues offered by its attendees. The proposed transformation of the TWG would include both the continuation of program-specific VV&A briefs as well as the creation of a TWG Oversight Committee that would meet once a year to analyze various issues for commonality and assign TWG volunteers to analyze the issues and offer potential solutions. The brief ended with a call for community feedback and suggestions for the specific design, schedule, and details of such a committee.

Discussions following this brief included an overall consensus that many of the recurrent issues identified by TWG attendees have universal resonance and that resolutions to these issues require systemic cooperation. Attendees pointed to the continued need for effective 'hammers' to enforce VV&A as well as the need to establish more concrete "best practices" for specific VV&A concerns (road-mapping legacy VV&A efforts, lines of funding and contract specification that create effective VV&A requirements, &c). An attendee queried how many common issues have been identified thus far. The presenter highlighted N81's call to address VV&A enforcement and resource issues.

Comments and questions regarding the Subcommittee formation can be addressed by e-mailing vva@navmsmo.hq.navy.mil

## 5.0 SSC-SD: Human Factors Engineering Mission-Centered Human-Computer Interfaces (HCI)

SPAWAR Systems Center San Diego presented a briefing on the HCI V&V process, beginning with an overview of the HCI design process, purpose, impact, and design qualities. The presentation the focused in on the specifics of HCI task navigation in support of specific Navy programs, task visualization, mission-centered design qualities, and the task of producing quality mission products that actually provide greater quality NAVMSMO to the warfighter and the associated range of relevant product automation. The presentation continued with use cases, work flow diagrams, and requirements/specifications for the HCI. From the validation perspective, performance testing, heuristic reviews of design, and exploratory testing of prototypes were detailed, including performance measures and performance metrics. The HCI program also provided handouts of their process that are available upon request.

Discussions following this presentation included the advocacy of HCI by MILSTEAD as an incorporated standard. Given the current lack of cognitive analysis standards, the presenter highlighted its current work in guidelines for DDX in task-centered designs rather than the current function-centered configurations and the need for these sorts of requirements to be included in acquisition statements. Additionally, questions regarding the potential for conflict between VV&A and maintenance and perfection of a Multi-Modal Watch Station console. The presenter noted that although little to no maintenance is required for the manned console equipment, this factor should be considered.

## 6.0 University of Maryland Institute for Systems Research: University of Maryland: Network & Simulation of Hybrid Networks

*Presentation slides are not available for this briefing. Please contact NAVMSMO M&S VV&A for POC information.

The University of Maryland's Institute of Systems Research (UMD ISR) presented an overview of its network M&S efforts, including the Hybrid Network of Space GiG and terrestrial sensor nets, wireless MANETs (Mobile Ad Hoc Networks), vicious attacks on MANET systems, joint urban operation M&S, and future battlefield network M&S. The UMD ISR program is currently researching traffic, topology, mobility, and propagation M&S, architecture, routing, security, and related issues. Each area of research was discussed at a high level with a demonstration of the M&S capabilities and basic statistical analysis of output results. Of particular emphasis was UMD ISR's work in dynamic routing protocol optimization in the urban context and cooperative dynamic firewalls for Anti –DDoS attacks. Validation techniques of these research models include the use of previous models, case-based testing, sensitivity analysis both theoretically and methodologically, and experimental design. The presentation concluded with a call for strategic partnerships in research collaboration.

## Roundtable Discussions and Outstanding Issues

An open roundtable discussion followed the TWG 17 briefs in order to determine the VV&A ongoing issues affecting organizations both within the Navy and DOD and possible solutions to these problems. Vigorous and lively discussion raised the following areas of concern:

### 6.0.1 Creating Processes for Capability-based Acquisitions

An attendee queried how VV&A fits into acquisition up front (rather than the current situation of VV&A at the end of systems development) and what are its mandates and enforcement provisions given the Navy's push towards capabilities-based acquisitions? The NAVMSMO M&S VV&A Lead responded that as the Navy's paradigm shifts from threats to capabilities and to from platform to network centricity, a Navy-wide strategy is needed for the alignment of M&S acquisition to meet the change of focus. Thus, M&S VV&A should clearly be considered early in the acquisition program. Further, acquisition of M&S is the responsibility of the program offices who

understand their M&S needs. The policy laid out in SECNAVINST 5200.40 directs that there is a requirement for M&S VV&A and provides authoritative organizations for specific M&S. However, there is no centralized authority for enforcement.

### 6.0.2 Propagating Accreditation & the Development of Centers of Excellence

An attendee queried whether a centralized accreditation mechanism exists for specific model types, such as aircraft models, ship models, analysis assessment models, etc. The NAVMSMO M&S VV&A Lead responded that SECNAVINST 5200.40 identifies the accreditation authority and validation authorities for specific M&S applications. However, currently there is no centralized Accreditation Authority for specific kinds of M&S (campaign analysis, operational analysis, etc.).

Discussion turned to the need for Centers of Excellence where type-specific M&S can be brought to an organization of Subject Matter Experts in the respective area for streamlined evaluation. This centralization was posited to be a step in galvanizing solutions to the problems that all Navy organizations are individually facing.

### 6.0.3 VV&A of Federative M&S

An attendee queried the current level of DON VV&A instruction regarding interoperable, HLA-compliant, and other federative M&S VV&A. The NAVMSMO M&S VV&A Lead responded that although HLA compliance does play a role in federative M&S and that IEEE standards exist for integrative and interoperable techniques, no specific standardization has been identified for M&S VV&A. This question remains open to discussion throughout the DOD and DON.

**Enclosure 1: Agenda**

**Navy Modeling and Simulation Management Office**
**Verification, Validation & Accreditation**
**Technical Working Group Workshop 17**
**Agenda**
**Friday, 07 May 2004**

| Time | Topic | Speaker |
|---|---|---|
| 0800- 0830 | Check-In | |
| 0830- 0835 | Administrative Remarks/Welcome/Introduction | NAVMSMO/ NAVSEA |
| 0835- 0920 | An Approach to the Modeling of Operational Test (and other) Assets | COTF |
| 0920- 1000 | Developing a Web-Enabled VV&A Documentation Tool | NAVMSMO |
| 1000- 1200 | Tour of NAVSEA Facilities | NAVSEA |
| 1200-1300 | Lunch | |
| 1300-1345 | NAVMSMO VV&A TWG: Reformation and Evolution | NAVMSMO |
| 1345-1430 | VV&A of HCI Simulation | SPAWAR |
| 1430-1440 | Break | |
| 1440-1525 | Round table Discussions | NAVMSMO |
| 1525-1610 | University of Maryland: Network Simulation Overview | University of MD ISR |
| 1610-1620 | Closing remarks/ Action Items | NAVMSMO |